A MID-TERM PREVISION FOR THE MEDICAL SOCIAL SERVICES NECESSITIES

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***Abstract**: The paper presents a model of the correlation between the demographic factor's variables and Romanian medical services system.*

Keywords: demographic factors; chronological series; statistical correlation.

1. Introduction

Demographic phenomena and their time modification have as a consequence the continuous change of the population state, from the point of view of its number and structure. Population closely linked to other subsystems of the national economy, among which the medical subsystem, therefore it is one of the objects of the social-economic policies. In order to study the correlation between the demographic factor's variables and those related to the necessities of the medical system we have to analyse the two components from the point of view of their evolution between 1994 and 2004.

2. The demographic factor and medical services

Total population: throughout the eleven years of analysis the total population decreased by a medium percentage of 0,47% namely, in absolute value, a decrease of about 105.730 persons / year (Tab.1).
Population by urban and rural area: the urban population decreased by a medium percentage of 0,43% and the rural one decreased by 0.52%. Population by age groups is shown in Tab.2. The young population, 0 – 19 years, decreased by about 2,44% each year, the adult population, 20 – 64 years, decreased by 0,5% per year, while the elder population, 65 years and over, registered an average growth rhythm of 1,5% each year which leads to demographic ageing of Romanian population.

Table 1

Population by year

	Number of population		
Years	**Total**	**Urban area**	**Rural area**
July 1, 1994	**22730622**	12427612	10303010
July 1, 1995	**22680951**	12457195	10223756
July 1, 1996	**22607620**	12411174	10196446
July 1, 1997	**22545925**	12404690	10141235
July 1, 1998	**22502803**	12347886	10154917
July 1, 1999	**22458022**	12302729	10155293
July 1, 2000	**22435205**	12244598	10190607
July 1, 2001	**22408393**	12243748	10164645
July 1, 2002	**21794793**	11608735	10186058
July 1, 2003	**21733556**	11600157	10133399
July 1, 2004	**21673328**	11895598	9777730

Table 2

Population by age

Age groups (years)	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
0-19	5916832	5759858	5609092	5425965	5331073	5229021
20-64	13613398	13689834	13745198	13307807	13294701	13295402
65 and over	2927792	2985513	3054103	3061021	3107782	3148905

Table 3

The correlation between the number of children with ages between 0 and 4 years and the number of beds in day-care centres

Years	**Children 0-4 years**	**Beds in day-care centres**
1999	1147065	22966
2000	1144825	20724
2001	1135506	19718
2002	1094213	14858
2003	1076715	14343
2004	1062521	13862

Throughout the six years the number of children with ages between 0 – 4 years decreased by approximately 1,52% which represents, in absolute value, a decrease of about 16.909 persons/year. The number of beds in day-care centres decreased by approximately 9,62% namely, in absolute value, a decrease of 1821 bed/year.

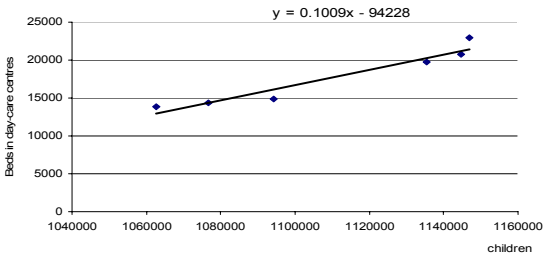

Figure 1. The correlation between the number of beds in day-care centres and the number of children aged between 0 and 4 years.

The coefficient of regression 0,10 shows that if the number of children with ages between 0 and 4 years grows by 100, the number of beds in day-care centres should grow by 10.

Table 4

The correlation between the number of children aged between 0 and 14 years and the number of beds in children hospitals

Years	Children 0-14 years	Beds in day-care centres
1999	4214951	24334
2000	4098080	21547
2001	3985623	21481
2002	3779298	20025
2003	3632680	17136
2004	3500149	17242

The number of children aged between 0 and 14 years decreased by about 3,65%, namely 142.960 children/year. The number of beds in children hospitals decreased by about 6,66%, namely 1418 beds/year.

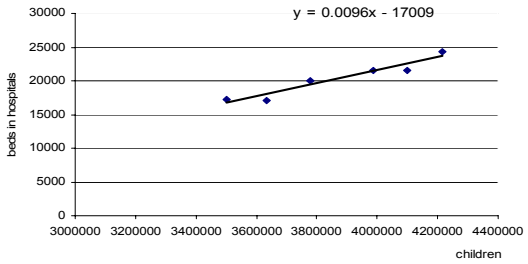

Figure 2. The correlation between the number of beds in children hospitals and the number of children aged between 0 and 14 years

The regression coefficient 0,00964 shows that if the number of children with ages between 0 and 14 years grows by 100.000, the number of beds in children hospitals should grow by about 96.

Table 5

The correlation between the total population number and the number of hospital beds

Years	Total population	Total hospital beds
1999	22458022	164215
2000	22435205	166858
2001	22408393	167943
2002	21794793	162675
2003	21733556	142739
2004	21673328	142573

The total population decreased by about 0,71%, namely 156.939 inhabitants/year and the number of hospital beds decreased by about 2,79%, namely 4328 beds /year.

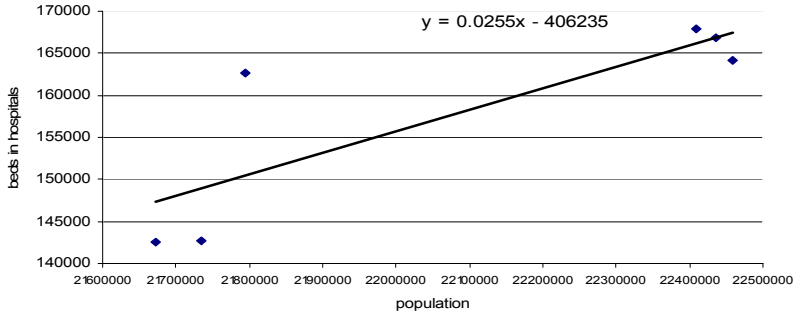

Figure 3. The correlation between the number of beds and the total population

The regression coefficient 0,0255 shows that if the population number grows by 10.000, the number of hospital beds should grow by about 255.

Table 6

The correlation between the total population number and the emergency medical assistance (ambulances number)

Years	Population (mil.)	Ambulances number
1999	22.46	3733
2000	22.44	3626
2001	22.41	3633
2002	21.79	3632
2003	21.73	3464
2004	21.67	3303

The regression coefficient 0,0255 shows that if the population number grows by 10.000 inhabitants, the number of ambulances decreased by about 2,42%, namely 86 ambulances/year.

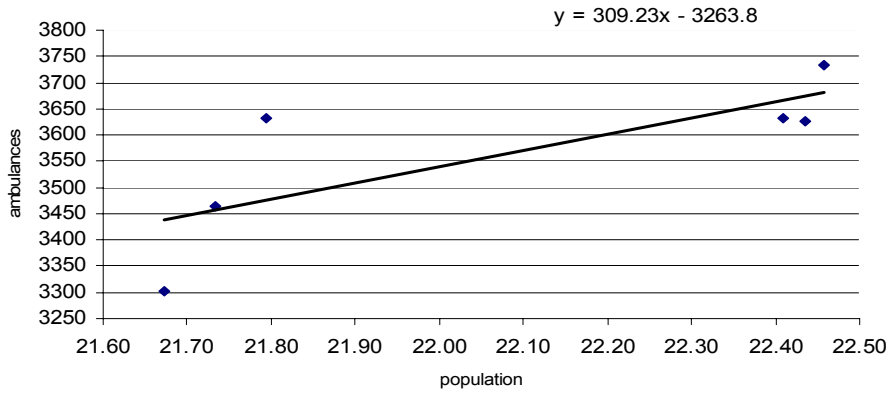

Figure 4. The correlation between the ambulances number and the total population

The regression coefficient 309,22 shows that if the population number grows by 1 mil. inhabitants, the number of ambulances should grow by about 309.

3. Conclusions

The analysis of the population evolution shows that there is an obvious decrease tendency. The same tendency is observable in the case of population segments under 60 years, while the segment of the population over 60 years is growing. In 2002 a significant population drop appears, marking an interesting "breaking point" in the evolution of the analysed period 1994-2004. The explanation could be related to the significant emigration of the persons able to work, mainly towards the countries of the European Union. Although there are no relevant official statistics, different sources put forward figures of 1-1,5 millions Romanians left at work in the EU countries, meaning that their relation to the Romanian health system is unclear. On the other hand integrating the UE will have short-term consequences upon the population segment over 60 years, due to the predictable worsening of life conditions generate by the alignment of public utilities prices to those of the EU. Otherwise said, it is probable for the mortality rate of this segment to modify outside the actual predictions.

The variation patterns of the population after 2007 will affect both the health services necessities and resources directly generated by the taxpayer range represented by employees. Romania is undergoing a difficult process in order to define or redefine the necessities of the health system under the pressure of the political-economical system change and of the social modifications provoked by this change. The number of taxpayers changed dramatically, at the same time with their attitude and with the way of reflecting their needs and the realities of the health system. Strictly from a statistic point of view, we have at this point a viable database with constantly improving performances. In this social context and with this statistics base, it was possible to identify some correlation between the medical services synthesised in a series of state variables and the elements of the demographic factor.

The variables chosen for analysis are part of the general category. The statistics refer to the whole country, although there are significant differences for all services categories between the rural and the urban area, as well as between the traditional historical areas. A certain number of districts present important deviations from the average, so that must be analysed separately in order to determine the causes of this dispersion.

From a different point of view we must underline that the statistics base didn't viewed the development of major discontinuities, generated by catastrophic unfolds. Facts that were statistically invisible in 2004 seem probable in 2006, the suggestion being given by the evolution of bird flu and the possibility of a pandemic. The prevention services for this type of evolution are, obviously, in an incipient stage in

which the experience is reduced even in developing some realistic statistic patterns. The number of variables taken into consideration in the produced patterns was very restricted in order to create a simplified image that will help us generate some mid-term solutions and to prepare some recommendations for the creation of some intervention policies. At present there are visible major dysfunction related to health resources management.

A first major problem would be that of the gathering of the contributions for this insurance. There is a permanent discrepancy between what is planed to be collected and what is done. This discrepancy appears as a consequence of the management and of the related regulations, but also of some characteristics of the general environment. The generated patterns of the field associate the general evolution of the national economy, reflected by the GDP (Gross Domestic Product) with the evolution of the resources available for the health system. A positive evolution of the economy means the assurance of an objective base for the generation of the resources, on a positive trend of the number of institutionalised taxpayers of the organisation type as well as their contribution.

The economic growth may lead to a growth of the tax bases generated by salaries, even if the number of employees doesn't grow in the same rhythm or even falls due to the economic restructuring and alignment to the EU standards. On another hand there is a correlation between the economic growth and the demand of health services. This is more visible at the level of the subjective component, by the growth of the demand of prevention and maintenance services generated by persons whose incomes are increasing and which are situated in the superior part of the echelon. These services will stress the importance of the private part of health services, but will have positive repercussions on the public part also, in the way of the improvement of the general state of health and of the diminution of the costs paid by the public system for these health products assured by the private system.

The discussions that took place in different professional or political forums suggest that there still are numerous differences regarding the may of gathering and allocating resources. These differences will finally determine the structure of health services offered by the public system and the amount of resources allocated to the prevention or to the intervention and management procedures systems.

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